Getting Water from *That* Cloud: Software-as-a-Service Opportunities for Water Conservation

CTWEN
Central Texas Water Efficiency Network

Central Texas Water Conservation Symposium

CONSERVATION WORKS!

BUILDING PROGRAMS FROM SIMPLE TO SOPHISTICATED

Thursday, Feb. 2, 2017 · 8:00 a.m.–3:30 p.m.

Frio River

AIQUEOUS

Presentation Overview

- What is the cloud and how does it work?
- Cloud-based solutions for water conservation
- Choosing a cloud-based solution to implement

What is cloud-based software?

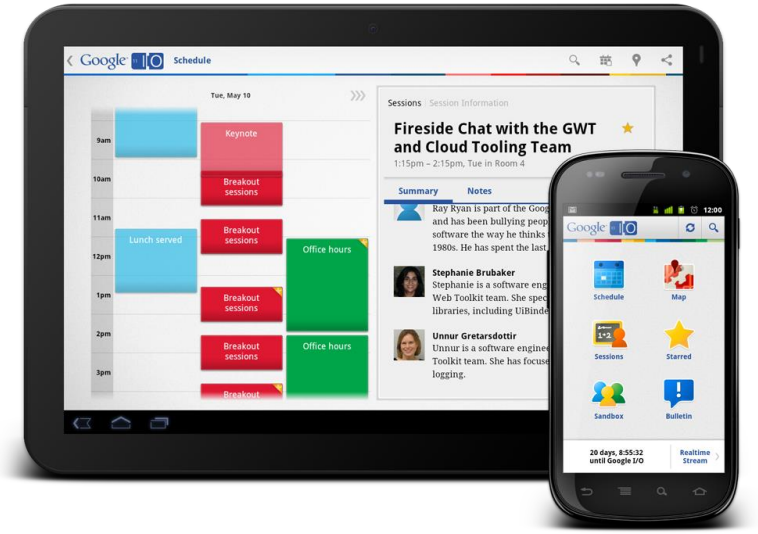
Rio Grande River

The cloud provides software and services

- The concept of cloud computing first appeared in the 1960s—but it did not take off until the late 1990s
- Examples of risk-adverse, regulated markets that have adopted cloud-based solutions:
  - Utilities
  - Government
  - Banking
  - Retail

Examples of cloud services

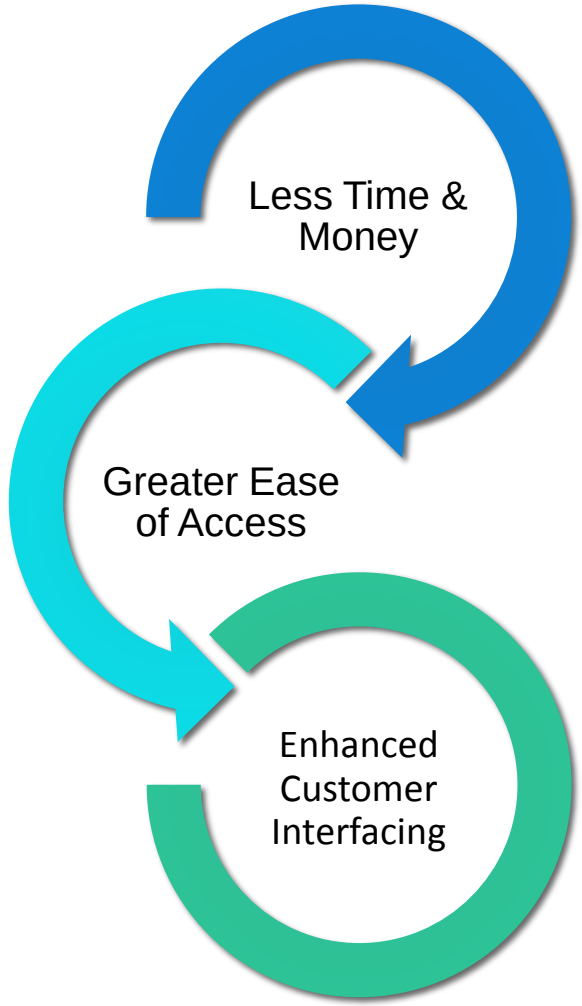
Google Drive, Microsoft SharePoint, Apple iCloud, Netflix, Dropbox, etc.



Companies such as Microsoft, Apple, Amazon, Google, etc. manage the servers providing the cloud services

Benefits of using the cloud

- **Cost Savings**
- Automatic **software updates**
- Provides enhanced **security**
- Facilitates **collaboration**
- Allows for **agility** and **scalability**



Cloud-based solutions for water conservation

Pecos River

AIQUEOUS

Types of cloud-based solutions

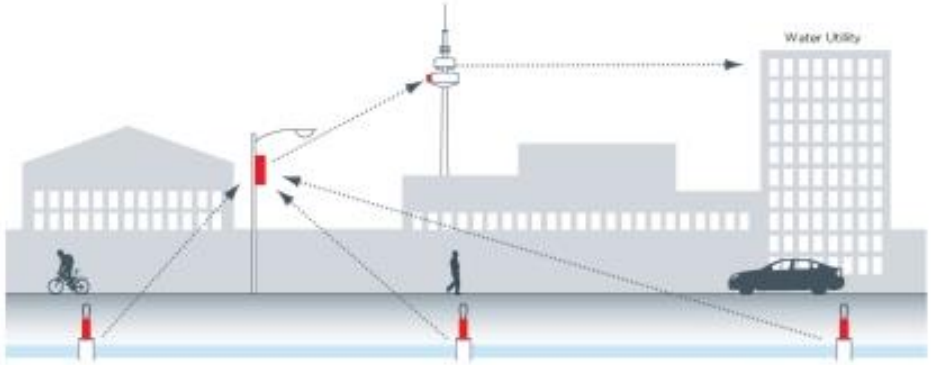
- Water loss prevention
- Behavior-based programs
- Smart irrigation technology
- Program management platforms

Water Loss Prevention

Leak Detection Technology

- **Devices equipped with cloud-based technology allowing for fast, automatic leak surveying and mapping**

- **Providers:**
  - Aquarius Spectrum (iQuarius)
  - Syrinix (TruckMinder & PipeMinder)
  - Gutermann (Zonescan Alpha)
  - TaKaDu
  - Itron (OpenWay Riva)
  - Sensus
  - Echologics (EchoShore)
  - Pure Technologies



Survey Results

Water Leak Survey

Water Loss Prevention

Smart Metering

- **Advanced Metering Infrastructure (AMI) offers:**
  - Real-time collection of water usage data at regular intervals
  - Two-way communication between the meter and utility
- **Providers:**
  - Meter Manufacturers
    - Neptune
    - Aclara
    - Sensus
    - Mueller Systems
    - Kamstrup
    - Itron
    - Master Meter
  - Meter Data Management Software
    - Badger (Beacon Advanced Metering Analytics)
    - Fathom (Fathom Prime)
    - Pecan Street

BEACON®

Managed Solution, BEACON® Advanced Metering Analytics (AMA)

Water Loss Prevention

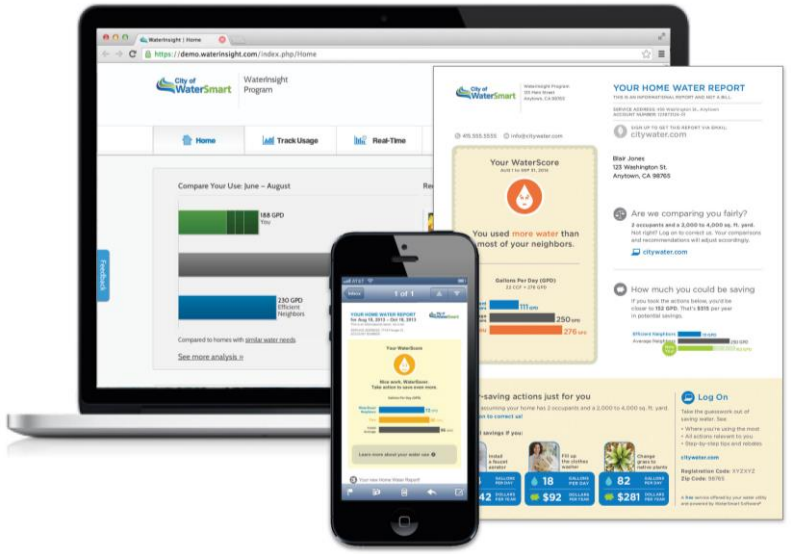
Benefits / challenges

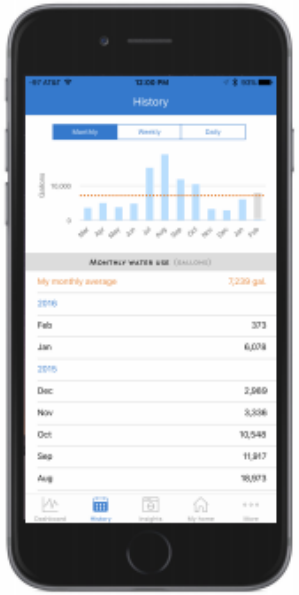
- **Value** provided:
  - Can enhance system management & performance
  - Can decrease operating costs
  - Can increase utility revenue
  - Can improve customer service
  - Can help inform prioritization of infrastructure investments
- Potential **obstacles**:
  - Upfront capital costs
  - Long-term payback (depending on financial strategy)
  - Decision to manage deployment in-house or through third party

Behavior-based programs

- **Platforms facilitating messaging and other outreach strategies to encourage reduced consumption**

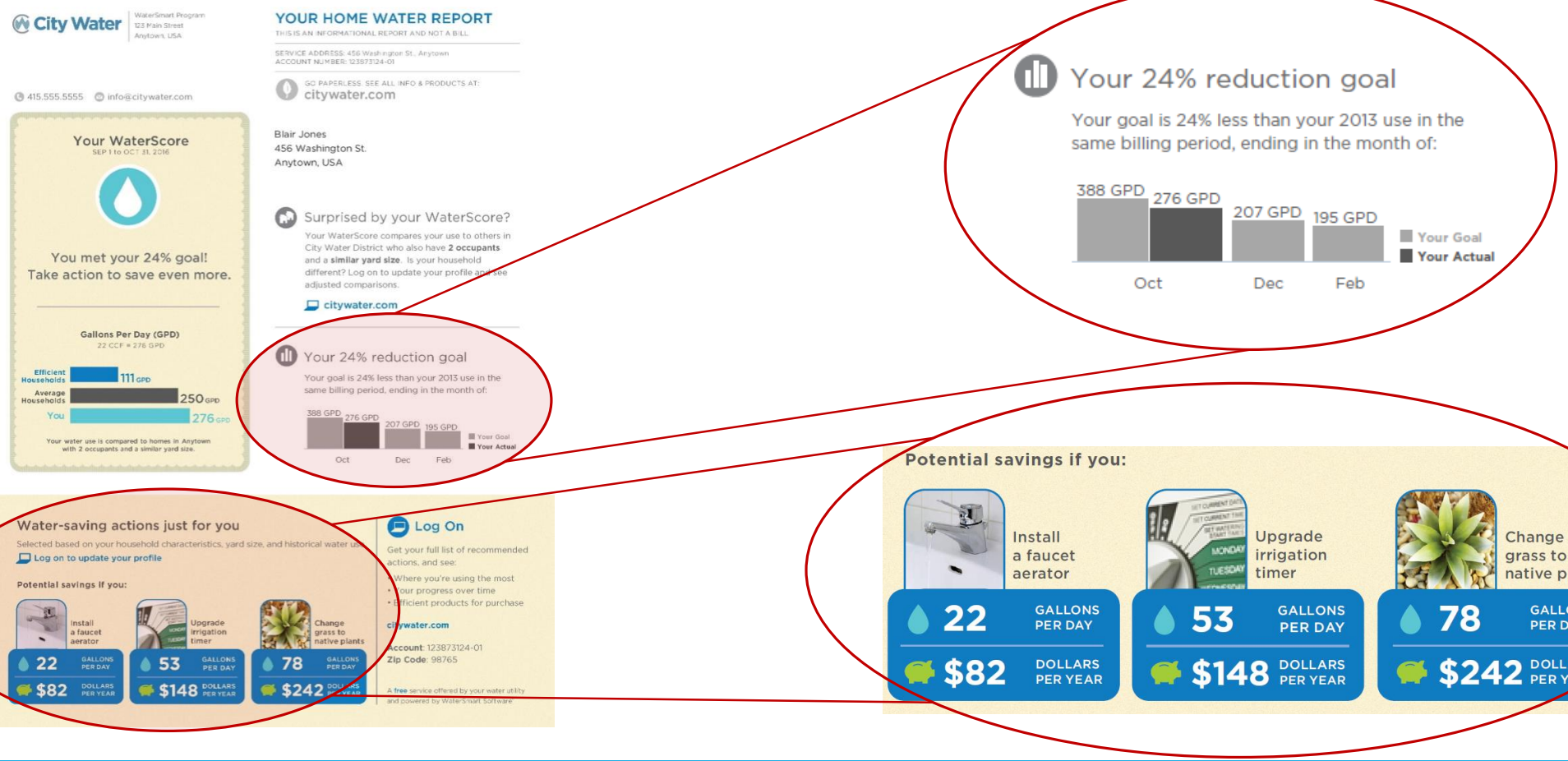
- **Providers:**
  - Pecan Street (BluWater)
  - WaterSmart
  - Dropcountr
  - AquaHawk
  - Aclara
  - Meterhero
  - Smart Utility Systems (Smart iQ)





Behavior-based programs

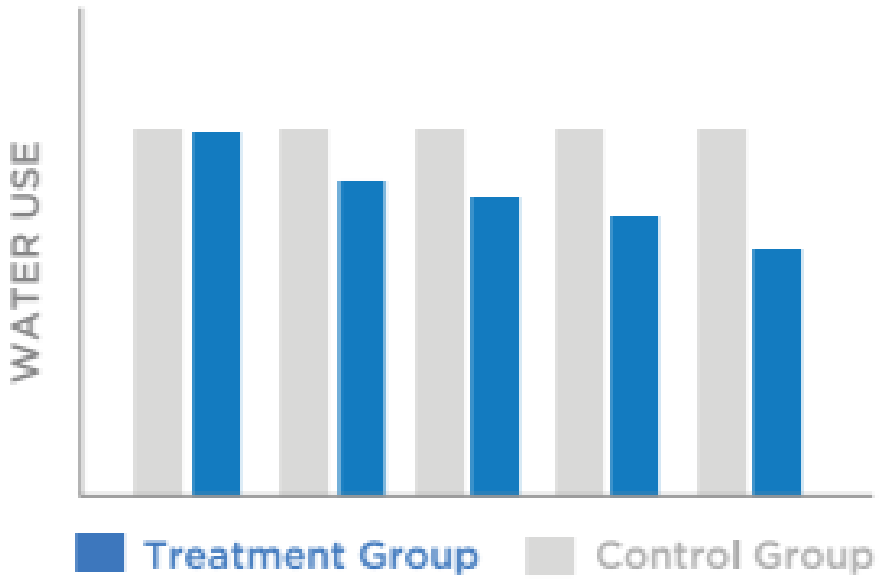
Customer outreach strategy: WaterSmart's Home Water Report



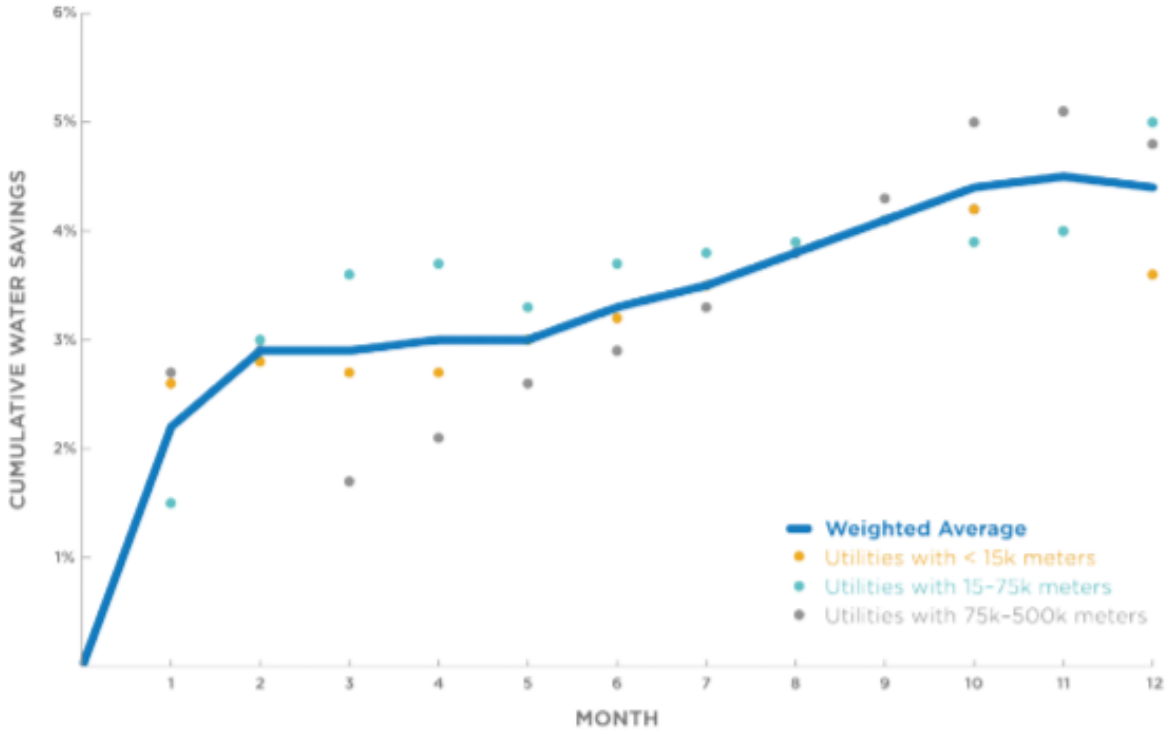
Behavior-based programs

Measurable Impacts: WaterSmart's Home Water Report

Reduced water use by treatment group



5% cumulative savings in first 12 months



Behavior-based programs

Benefits / challenges

- **Value** provided:
  - Can yield program savings not provided by pure data visualization
  - Can improve customer engagement
  - Can improve strategic communications
  - Can increase customer satisfaction
  - Can build greater trust between utility & customer

- Potential **obstacles**:
  - Securing adoption by customers
  - Measuring associated water savings
  - Persistence of savings
  - Training customers on how to interpret results/information
  - Potential increase in call volume

Smart irrigation platforms

Smart controller technology

- **Devices that adjust irrigation schedules according to environmental conditions (e.g., precipitation, evapotranspiration, & soil moisture)**

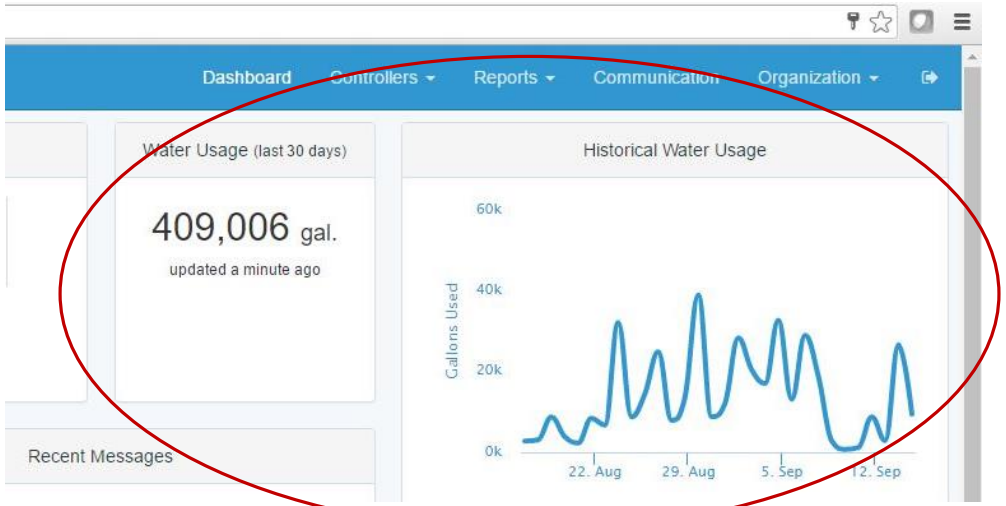
- **Providers:**
  - Residential controllers
    - Skydrop*
    - Rachio*
    - Weathermatic*
    - WeatherTRAK*
    - Hunter*
    - Blossom+
    - Sprinkl+
    - Cyber Rain+
    - Rain Bird +
  - Commercial controllers
    - Banyan*
    - Weathermatic*
    - Hunter *
    - WeatherTRAK*
    - Cyber Rain+
    - Rain Bird +

* ET-based controllers

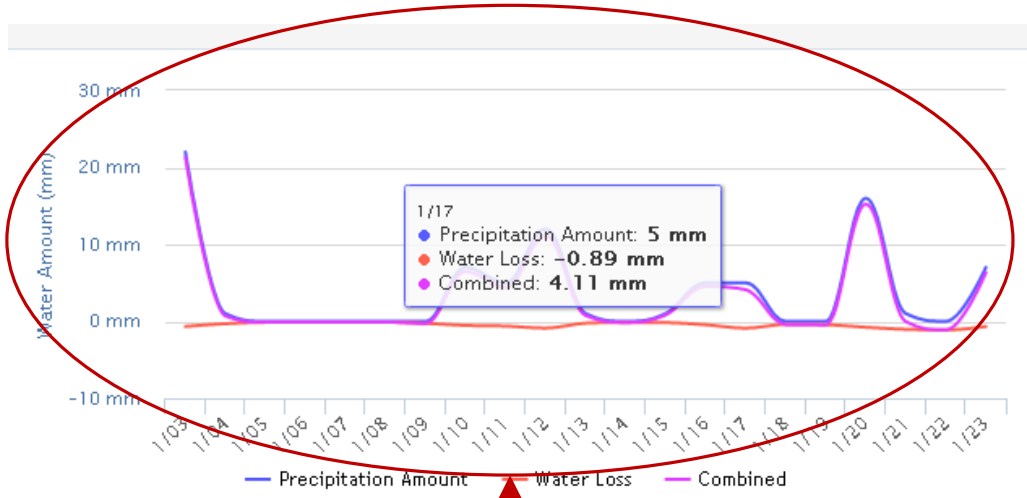
\+ Weather-based controllers

Smart irrigation platforms

Skydrop's Administrative Dashboard



Track current & historical water usage



Monitor precipitation & evapotranspiration conditions

Smart irrigation platforms

Measurable Results: Del-Co pilot program

Estimated Total gallons saved	Water savings attributable to controllers	Pilot		
		Low users	Medium users	High users
	% water savings	8.1 to 11.9%	2.4 to 16.1%	9.1 to 22.9%
	Total gallons saved for all users	117,600 to 267,600 gallons		
	% Total water savings	6.9 to 15.7%		

Estimated total water savings ranged from 7 to 16% over 3 summer month period.

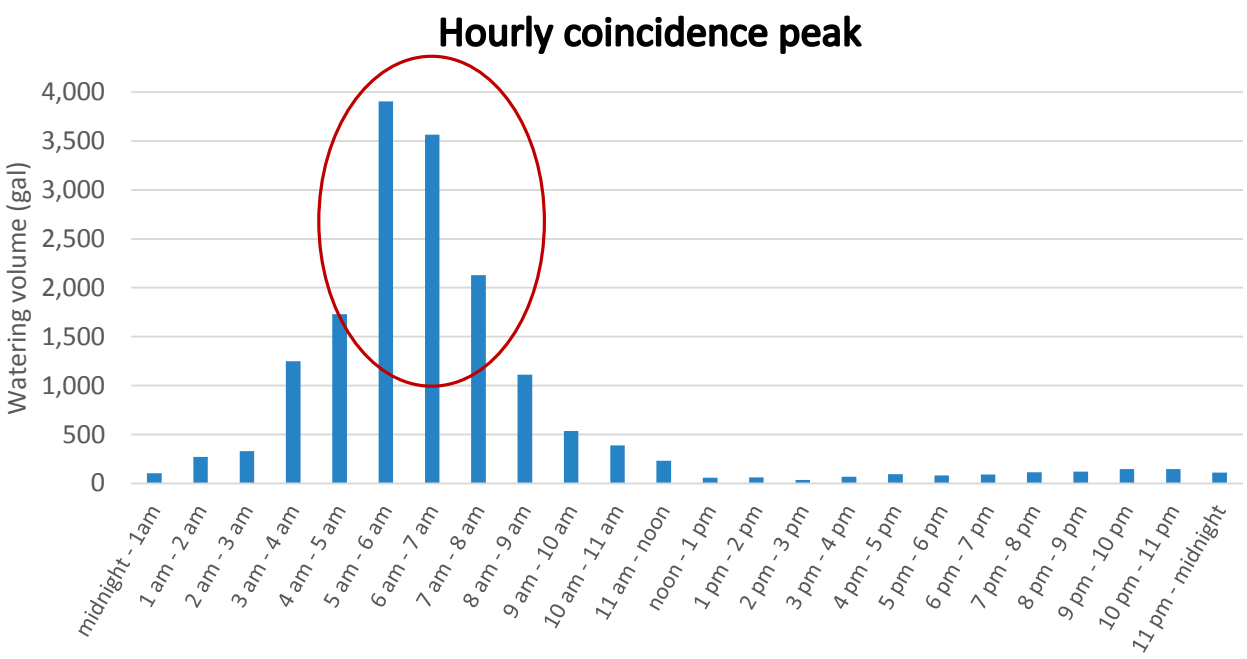
Price per gallon saved ranged from $0.03 to $0.08

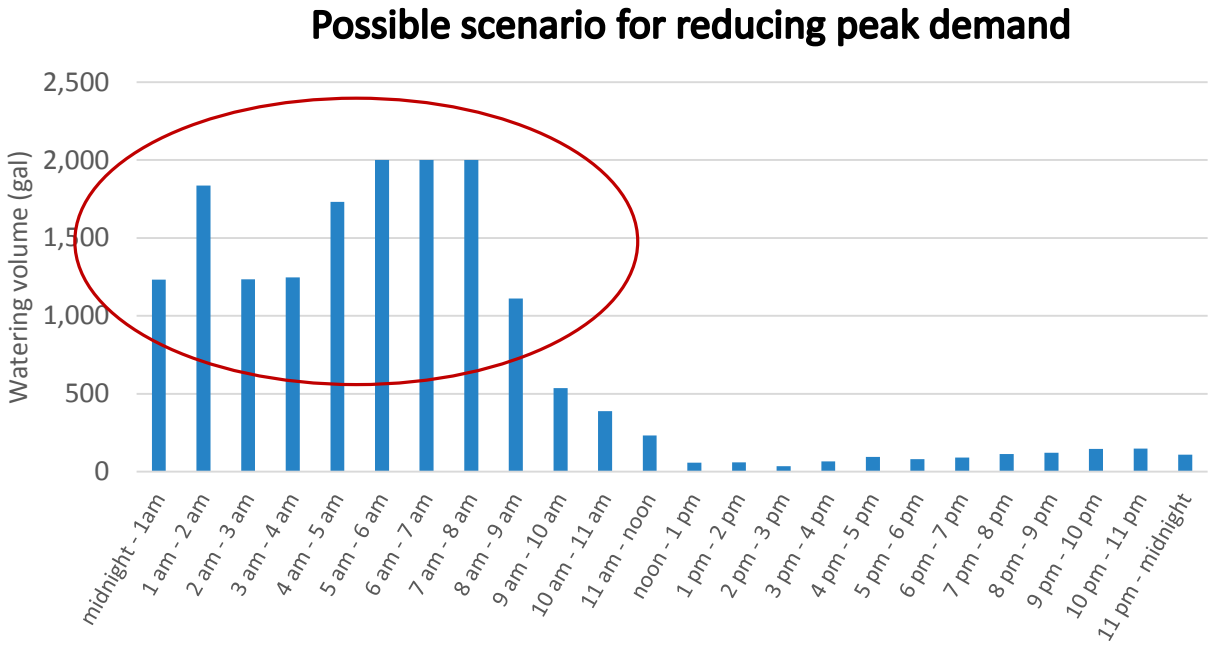
Water savings due to controllers	Pilot		
	Low users	Medium users	High users
Total summer savings	$26.50 to $39.00	$12.00 to $101.70	$57.10 to $152.80
% savings	7.8 to 11.4%	2.7 to 22.4%	12.5 to 33.5%
# of summers before payback	8 to 12	3 to 25	2 to 6

Customer financial savings ranged from 3 to 34%

Smart irrigation platforms

Measurable Results: Del-Co pilot program





Use control settings available through smart irrigation technology to spread out watering schedules and reduce peak demand

Smart irrigation platforms

Benefits / challenges

- **Value** provided:
  - Can help manage peak demand
    - Ex: Del-Co smart irrigation controller pilot program
  - Can promote customer engagement
  - Can increase customer satisfaction & notification
  - Can build greater trust between utility & customer

- Potential **obstacles**:
  - Securing adoption by customers
  - Measuring associated water savings
  - Managing data confidentiality (individual usage patterns)

Program management platforms

- **Software tools used to manage conservation programs & streamline program-related activities**

- **Providers:**
  - AIQUEOUS (WaterWays)
  - ConserveTrack
  - Nexant (iEnergy – water-energy nexus focus)
  - Droplet Technologies

DROPLET TECHNOLOGIES

AGENCY CONSUMER

Program management platforms

Benefits / challenges

- **Value** provided:
  - Organizes/simplifies program management
  - Can reduce audit risk
  - Can help create more efficient workflows (e.g., reduced paperwork, call volume)
  - Can enable reallocation of labor to higher-value tasks
  - Can improve effectiveness of customer outreach
- Potential **obstacles**:
  - Getting IT department onboard (if necessary)
  - Department apprehension regarding data security
  - Data export & ongoing data communication
  - Getting customers to switch to electronic submissions

Choosing a cloud-based solution to implement

Medina River

Where should you start?

- **Identify the biggest challenge your department is facing**
  - Can challenge be easily addressed using cloud-based solution?
  - Can a cloud-based solution produce outcome that is easily visible?
- **Understand the market and understand your organization**
  - What's the market landscape?
  - Who do you need to get onboard within your organization?
- **Identify any other external champions & engage with them**

Challenges to adopting cloud-based solutions

- **Perceived risks**
  - Data security
  - Public health risks
  - Performance risks
  - Public outcry
- **Utility's decision making process**
  - IT requirements
  - Procurement requirements
  - Involvement of multiple departments
- **Budget**
  - Unplanned expenses vs. planned
  - How to quantify return on investment
  - Use capital or operating budget

Overcoming internal hurdles

- **Perceived risks**
  - Find examples of success
  - Understanding what has and hasn't worked for other utilities
- **Utility's decision making process**
  - Understand what decision factors are most important to IT, procurement, and other departments
  - Understand whether they have the resources necessary to support the implementation
- **Budget**
  - Find room in the operating budget or determine whether tradeoffs can be made
  - Pursue innovative financial solutions

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DATA-DRIVEN WATER INSIGHTS AND SOLUTIONS

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